

ABSTRACT OF THE DISCLOSURE

09/392270

An apparatus and method for manufacturing a vehicle frame component allow a preliminary heat treatment process to be performed in a relatively quick and easy manner so as to facilitate the subsequent performance of a bending or other deforming process. Initially, a workpiece that is to be manufactured into the vehicle frame component is provided. The workpiece is preferably a closed channel structural member formed from an aluminum alloy and having a circular or box-shaped cross sectional shape. The workpiece is subjected to a scanning heat treatment process, wherein the workpiece is heat treated in a continuous and longitudinal manner from one end to the other. Preferably, the workpiece is supported vertically during the scanning heat treatment process to prevent the shape thereof from becoming distorted. The scanning heat treatment process is preferably a retrogression heat treatment process, wherein the workpiece is rapidly heated to a sufficient temperature that provides for full or partial softening thereof, followed by relatively rapid cooling. In a third step of the method, a deforming process is performed on the workpiece during the period of time following the retrogression heat treatment process in which the workpiece retains the full or partial softening characteristics. Any desired deforming process may be performed on the workpiece, including hydroforming, magnetic pulse welding, or both.

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